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ABSTRACT

Information on college internships with environmental organizations and educational requirements of applicants is presented, based on 1972-1982 data collected on 1,485 projects by the Center for Environmental Intern Programs (CEIP). CEIP is a clearinghouse for several hundred U.S. internships. Data such as year, location, sponsoring sector, number of interns, qualifications, salary, duration of internship, and disciplinary background were extracted, computer coded, and analyzed. Findings include: internship positions through the CEIP program were mainly offered during the summer; many CEIP internship positions required a junior or senior level student; most positions were offered by the government sector (mostly local, regional, and state level agencies), followed by nonprofit organizations and the corporate sector; most internships lasted 12 weeks, with a range of 4 to 52 weeks; most CEIP interns were provided a stipend; many employers defined internships in terms of clearly defined tasks to be accomplished; and only occasionally were positions described with a general environmental studies major in mind. Individual disciplines and application areas for the internships are identified, along with frequency distributions. (SW)

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ENVIRONMENTAL INTERNSHIPS:
Where are they and who is wanted?

by R. Rajagopal

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ENVIRONMENTAL INTERNSHIPS

Where are they and who is wanted?

Information on environmental employment and the educational qualifications required to enter it are quite limited (1). At present, to the best of our knowledge, there is no single comprehensive study describing the educational qualifications of students entering environmental internship programs. Enrollment, placement effectiveness, and the nature of internship assignments are often reported through brochures, newsletters, college catalogs, papers presented at symposia and conferences (2, 3), and by word of mouth of faculty and past interns. In order to obtain a perspective on this topic, the results of a survey on environmental internships and a brief analysis of related educational requirements are presented in this paper.

With suitable academic preparation, college students (both undergraduate and graduate) can qualify to enter one of several career fields within the environmental profession. For example, internships and entry-level professional opportunities regularly become available in the following areas:

- environmental science and ecology
- environmental planning
- environmental policy analysis
- environmental systems analysis
- information systems
- environmental economics
- land use planning
- zoning administration
- environmental communication
- resource management
- recreation management
- environmental monitoring
- project management
- environmental impact statement assessment and review
- soil conservation
- habitat management

State and federal agencies, national laboratories, and other private and corporate organizations sponsor internships and co-operative work-study programs on a regular basis. Internships and work-study positions often lead to

full-time career positions (4). For example, the following statement by Dr. David S. Rulison of SOHIO, an internship sponsor, clearly captures the essence of this belief. "We obtained high quality help during a period when we needed it at a fraction of the usual cost. The Program is also available as a tool for recruiting future, permanent employees as it gives us a chance to see them in action" (from a CEIP brochure). Even though internships are not well-tested indicators of the ever changing environmental workforce needs, they can be of some use in obtaining a general perspective on the subject.

THE CENTER FOR ENVIRONMENTAL INTERN PROGRAMS (CEIP)

Introduction

The Center for Environmental Intern Programs (CEIP) of Boston, Massachusetts, serves as a clearinghouse for several hundred internships around the nation. The Environmental Intern Program began in 1972 as a pilot project in the northeast region of the United States. Basically, it functions to coordinate the demand for technical staff to work on short-term projects with the supply of highly motivated students interested in professional experience in the environmental field. The success of this pilot project became the basis for the development of a network of regional environmental intern programs. Presently there are four programs in operation. Table 1 demonstrates the growth of the program from 16 projects for 19 interns in 1972 to its current scope of 272 projects for 326 interns in 1981. Since 1972 the program has coordinated a total of 1,485 projects for over 1,800 interns in 18 different states.

The Data Base

The 10-year collection of 1,485 CEIP project listings formed the data base used in this study (see Exhibit A for a sample project listing). Infor-

Table 1

Distribution of the number of environmental intern project listings and the number of needed interns (in parentheses) by year and region.

Compiled from 1485 project li.tings provided by The Center for Environmental Intern Programs (CEIP), Boston, assachusetts. 1981.

YEARS	Northeast	California	Lower Great Lakes	Pacific Northwest	TOTAL
1972	16 (19)	-	-	-	16 (19)
1973	73 (73)	-	-	-	73 (73)
1974	129 (166)	-	-	-	129 (166)
1975	127 (172)	-	-	-	127 (172)
1976	88 (109)	-	-	-	88 (109)
1977	104 (144)	25 (25)	-	-	129 (169)
1978	95 (124)	57 (65)	25 (32)	-	174 (218)
1979	95 (120)	72 (86)	49 (60)	-	216 (266)
1980	80 (98)	91(110)	60 (64)	23(23)	254 (295)
1981	97 (112)	92(113)	4[illegible] (59)	42(46)	272 (326)
TOTAL	897(1130)	337(399)	179(215)	65(69)	1485(1820)

mation such as year, region, state, sponsoring sector, number of needed interns, required qualifications, salary, duration of internship, disciplinary background and application area (skills) was extracted from each project listing and computer coded for further analysis.

Exhibit A

Bureau of Parks and Recreation

24-36 weeks $140/wk Car needed: Yes

Two undergraduate level interns are needed to work out of Augusta conducting a natural area and resources inventory of three public land holdings; Bigelow Mountain, Mahoosuc Notch area and Debouille and Gardner Mountains preserves in Aroostook County. One intern will work with State Planning Office's Critical Areas Program on critical area identification and the other intern will work with the Bureau on the natural resources inventory. A report will be prepared on each preserve.
Qualifications: biology, botany, geology, zoology and/or resources management major with drafting, photography, photo interpretation, field identification, typing and writing skills. Preference given to Maine residents.

DISCUSSION OF RESULTS

Internship positions through the CEIP program were mainly offered during the summer months so as to provide college students with hands on experience in environmental protection. The experience gained from these internships is valuable to students and is not easily replicable within academic programs (5).

Many CEIP internship positions required a junior or a senior level college student (Table 2). The government sector--mostly local, regional, and state level organizations--offered the most positions, followed by non-profit organizations and the corporate sector (Table 3).

TABLE 2

Required Qualifications	Number of Projects (Number of Interns)
Undergraduate[1]	810 (1,030)
Undergraduate/Graduate[2]	174 (207)
Graduate[3]	501 (583)
TOTAL	1,485 (1,820)

[1]Undergraduate - preferably juniors or seniors

[2]Undergraduate/Graduate - preferably seniors or graduate students

[3]Graduate - graduate students

TABLE 3

Sponsoring Sector	Number of Projects (Number of Interns)
Government[1]	816 (1,035)
Private (Non-Profit)	428 (502)
Corporate	241 (283)
TOTAL	1,485 (1,820)

[1]Government sector includes mostly local, regional and state level organizations with very few at the federal level.

Internships ranged in duration from 4 to 52 weeks, with a majority offered for 12 weeks. Although within the 10-year period there were a few volunteer positions, most CEIP interns were given a stipend. These stipends varied with the level of education, the sponsoring organization, and the year. Average stipends increased from about $110 per week in 1973 to $190 per week in 1981. There was a small difference of $10 to $20 per week between undergraduate and graduate student stipends, and corporations generally granted the highest stipends.

Each project listing was classified according to two sets of keywords, as shown in Table 4. Discipline keywords reflect the general fields of education usually available at the undergraduate level. Application keywords are identifiable categories of specialized skills or competencies. In both categories, one keyword will often include several related fields of study. Examples of this are "communication" which includes media communication, journalism, library sciences, and public speaking; and "natural resources," which includes forestry, fisheries, wildlife, water resources, and soils.

The individual disciplines and application areas of related nature are further grouped to form a higher order classification, as shown in Table 4. For example, biology, botany and zoology are grouped to form the "biological sciences". Similarly, resource inventory, impact analysis, survey analysis and statistical analysis are grouped to form "measurements and methods". These higher order groups for disciplines can be viewed as programmatic areas or schools in college campuses, while the groups of application areas can be seen as potential career fields.

Table 5 shows the frequency distribution of project listings by discipline and application area. Table 6 is a condensed version of Table 5; it shows the frequency distribution of project listings by discipline and application area

Table 4

Disciplines, Application Areas and Their Abbreviations by Related Groupings

DISCIPLINE		APPLICATION AREA	
SOCIAL SCIENCES		ADMINISTRATION, PLANNING & REGULATION	
Communication	COMM	Urban Planning	UPLAN
Political Science	POLS	Public Administration	PADM
Geography	GEOG	Land Use	LUSE
Social Science	SOCS	Regulation	REGN
History	HIST		
Recreation	RECN	RESOURCE MANAGEMENT	
Anthropology	ANTH	Resource Management	RESMGT
		Preservation	PSVN
BIOLOGICAL SCIENCES			
Biology	BIOL	MEASUREMENTS AND METHODS	
Botany	BOT	Resource Inventory	RESINV
Zoology	ZOOL	Impact Analysis	IMP
		Survey Analysis	SURV
BUSINESS ADMINISTRATION		Statistical Analysis	STAT
Economics	ECON		
Business	BUS	EDUCATION	ED
Computer Science	CSCI		
		INSTRUMENTATION & TECHNOLOGY	
ENGINEERING	ENGG	Environmental Monitoring	EMON
		Technology Development	TECH
LAW	LAW	Chemical Analysis	CANAL
NATURAL RESOURCES	NATRES	HEALTH AFFAIRS	
PHYSICAL SCIENCES		Public Health	PH
Chemistry	CHEM	Occupational Health	OH
Geology	GEOL		
ARCHITECTURE	ARCH		
TRANSPORTATION	TRANS		

Table 5

Distribution of Environmental Intern Project Listings by Discipline and Application Area

Compiled from 1485 project listings provided by The Center for Environmental Intern Programs (CEIP), Boston, Massachusetts. 1981.

DISCIPLINE	APPLICATION AREA																
	UPLAN	PADM	LUSE	REGN	RESMGT	PSVN	RESINV	IMP	SURV	STAT	ED	EMON	TECH	CANAL	PH	OH	TOTAL
COMM		14	3	1	1						52					3	74
POLS	16	13	8	3	3				4	2	4		1		3		57
GEOG	14	1	15		7	1	10	2		4	2						56
RECN	14	2	1		10		2	2	3	1	6						41
SOC	7	11	1		2			1	8		4					2	36
HIST			4			20			1		6						31
ANTH						2	1		1		1						5
BIOL	1	4	7	1	62	1	45	13	2		71	13	2	4	1	1	228
BOT					9		19				4						32
ZOOL					2		7				4						13
ECON	23	31	9	3	17			7	3	10	4	2	6		1		116
BUS	6	20	4	3	6	1		3	3	1	4	1	4		1	1	58
CSCI		1	1	2	1		3		1	7	1	1	4		1		23
ENGG	15	13	2	7	25	1	1	13	3	6	8	21	43	2	10	4	174
LAW	14	21	36	63	22			3	1		1	2	1		3		167
NATRES	6	9	10	3	46		37	8	2	2	22	5					150
CHEM	1	2		7	1			7	1		3	25	1	14	3	4	69
GEOL		1	3	1	12		11				2	5			1		36
ARCH	22	4	3	1	4	28			1		6		6			1	76
TRAN	20	7	2		1			10	1		1	1					43
TOTAL	159	154	109	95	231	54	136	69	35	33	206	76	68	20	24	16	1485

Table 6

Distribution of Environmental Intern Project Listings by Discipline and Application Area Groups

Compiled from 1485 project listings provided by The Center for Environmental Intern Programs (CEIP), Boston, Massachusetts. 1981.

	ADMINISTRATION, PLANNING AND REGULATION	RESOURCE MANAGEMENT	QUANTITATIVE METHODS	EDUCATION	INSTRUMENTATION AND TECHNOLOGY	HEALTH AFFAIRS	TOTAL
Social Sciences	128	46	42	75	1	8	300
Biological Sciences	13	74	86	79	19	2	273
Business Administration	103	25	38	9	18	4	197
Engineering	37	26	23	8	66	14	174
Law	134	22	4	1	3	3	167
Natural Resources	28	46	49	22	5	0	150
Physical Sciences	15	13	19	5	45	8	105
Architecture	30	32	1	6	6	1	76
Transportation	29	1	11	1	1	0	43
TOTAL	517	285	273	206	164	40	1485

groups as defined in Table 4. Tables 5 and 6 provide insights into the combination of disciplines and application areas that have been in demand in the CEIP program. The following are some of the combinations that have been in significant demand (from Table 5):

- biology/education
- law/regulation
- biology/resource management
- communication/education
- natural resources/resource management
- biology/resource inventory
- engineering/technology development
- natural resources/resource inventory
- law/land use
- economics/public administration
- architecture/preservation
- engineering/resource management
- chemistry/environmental monitoring
- economics/urban planning
- architecture/urban planning
- natural resources/education

An exception should be noted concerning the large number of positions in the education field, particularly with reference to the disciplines of communication, biology and natural resources (Table 5). These positions reflect the large number of summer camps and other similar public education programs which may only have a small number of counterparts during the regular year.

CONCLUSIONS

At the undergraduate level, environmental education programs in the United States can be grouped into two broad categories--general purpose and specialized. The general purpose programs (environmental studies) have their roots in liberal learning, ecology, and inter- and multidisciplinary course offerings. They claim to stress integration of different disciplines to achieve a holistic perspective and attempt to develop a student's problem-solving skills as opposed to technical skills. The awareness created by such

programs has often played an important role in activist movements and has sometimes led to the formulation and passage of landmark environmental legislations.

On the other hand, the many specialized programs (environmental health, environmental engineering, environmental law, etc.) requiring depth within a traditional discipline such as biology, chemistry, sanitary engineering, toxicology, microbiology, law, public health, and others have their roots in existing occupational categories in government and industry. These programs are resource or content-specific, oriented to technical applications or skills. Graduates of these programs compete effectively in filling the more than 100 different environmentally related occupational titles, from air chemist to wildlife biologist (6).

From almost all the project listings reviewed for this study, it is clear that employers define internships in terms of clearly defined tasks to be accomplished in a limited time period with specific skills or competencies. For example, internships require biologists, botanists, or zoologists for vegetation or animal inventories, chemists for monitoring, engineers for technical and instrumentation skills, lawyers for regulatory affairs, historians for preservation projects, economists and geographers for urban planning and public administration and so on. Only occasionally are positions described with a general environmental studies major (undergraduate) in mind. Therefore, for the most part, environmental studies majors are at a competitive disadvantage in securing these internships. However, an undergraduate student who is a double major or has obtained a certificate in environmental studies, in addition to majoring in a traditional field, may not encounter any significant disadvantage (it might even be advantageous) in competing for these internships. Similarly, a graduate student with some disciplinary or a specialized

background with an orientation to an application area may not encounter any significant competitive disadvantage.

REFERENCES

1. National Academy of Sciences. Manpower for Environmental Pollution Control. Washington, D.C., 1977.

2. Sacks, A.B. and Davis, C.B. (Ed.). The Yearbook of Environmental Education and Environmental Studies, Current Issues V, ERIC Clearinghouse for Science, Mathematics, and Environmental Education, Ohio State University, Columbus, Ohio, 1979.

3. Sacks, A.B. et al., (Ed.). The Yearbook of Environmental Education and Environmental Studies, Current Issues VI, ERIC Clearinghouse for Science, Mathematics, and Environmental Education, Ohio State University, Columbus, Ohio, 1980.

4. Robinson, G.O. The Forest Service. The Johns Hopkins University Press, Maryland, 1975.

5. Perrine, R.L. TSCA and the Universities: Educating the Environmental Chemical Professional. The Environmental Professional, 4(2): 187-200, 1982.

6. U.S. Department of Labor and U.S. Environmental Protection Agency. Environmental Protection Careers Guidebook. Employment and Training Administration, U.S. Department of Labor, Washington, D.C., 1980.